

REMARKS

Reconsideration of the above-identified patent application in view of the amendment above and the remarks below is respectfully requested.

Claims 17-37 and 45-54 have been canceled in this paper. Claims 38 and 41 have been amended in this paper. No claims have been added in this paper. Therefore, claims 1-16 and 38-44 are pending. Of these claims, claims 3-4, 7-10, 13-14 and 42-44 have been withdrawn from consideration. Accordingly, claims 1-2, 5-6, 11-12, 15-16 and 38-41 are under active consideration.

Claims 1-2, 5-6, 11-12 and 15¹-16 stand rejected under 35 U.S.C. 103(a) "as being unpatentable over Yoshida (U.S. 5,818,559) in further view of Bahadur (Liquid Crystals 1990)."

In support of the rejection, the Patent Office states the following:

As to claim 1, note the following elements in figure 1: liquid crystal (10), resin substrates (8 and 12), transparent electrodes (9 and 11), phase retarders (6 and 14), adhesive layers (5, 7, 13 and 15), polarizing films (3 and 17), and protective films (2, 4, 16 and 18). Protective film 4 is considered the first transparent plate. Protective film 18 is considered the second transparent plate. Yoshida discloses that the substrate of the liquid crystal cell and the protective films require high transparency. See column 1, lines 10-35.

Yoshida does not explicitly state that the polarizers are crossed. Bahadur discloses that for cases other than when perpendicular viewing is very important, normally white mode with crossed polarizing axes was standard. See page 189. It would have been obvious to one of ordinary skill in the art at the time of invention to cross the polarizers because it was the most widely applicable arrangement.

¹ Although claim 15 is not included in the statement of the rejection or in the reasons supporting the rejection, it is believed that such an omission was not intended by the Patent Office since claim 15 is not indicated as being allowable on the Summary Page of the outstanding Office Action. In the event that Applicants' understanding is incorrect, clarification is respectfully requested.

As to claim 5, the protective film 2 in figure 1 of Yoshida is considered the third transparent plate.

As to claims 2 and 6, [Yoshida] discloses that the protective films are made of resin instead of glass. It was well known that glass was cheap to manufacture and had a high level of transparency. Yoshida discloses that the protective films require a high level of transparency as discussed above. It would have been obvious to one of ordinary skill in the art at the time of invention to form the protective films with glass because glass was cheap to manufacture and satisfied the level of transparency required for the protective film.

As to claim 11, Yoshida does not explicitly disclose an active matrix liquid crystal display panel. Bahadur discloses that active matrix displays can realize a very high quality image, suitable for color TV displays and computer monitors. See page 172. It would have been obvious to one of ordinary skill in the art at the time of invention for the display panel of Yoshida to be active matrix because of the high image quality.

As to claim 12, Yoshida discloses that a backlight is provided on the surface of polarizing sheet III, which would be behind the second transparent plate (protective film 18). See column 7, lines 1-2.

As to claim 16, figure 1 of Yoshida shows the front polarizer (polarizer 3) adhered directly to the third transparent plate (protective film 2).

Applicants respectfully traverse the present rejection. The present rejection appears to be predicated on the Patent Office's position that one may read Yoshida so that, among other things, (i) element 4 may be regarded as the claimed first transparent plate, (ii) element 3 may be regarded as the claimed front polarizer, (iii) element 18 may be regarded as the claimed second transparent plate, and (iv) element 17 may be regarded as the claimed rear polarizer. Applicants respectfully disagree with such a reading of Yoshida. Yoshida clearly teaches that elements 1, 2, 3 and 4 collectively define "polarizing sheet I" and that elements 16, 17 and 18 collectively define

“polarizing sheet III.” Consequently, one of ordinary skill in the art would not have regarded mere portions of polarizing sheets I and III, namely components 3 and 17, respectively, as constituting front and rear polarizers, respectively, but rather, would have regarded the entire functional unit of polarizing sheets I and III as front and rear polarizers, respectively. In fact, Applicants note that Yoshida, itself, states at col. 1, lines 14-15, that “[a] liquid crystal display usually comprises a liquid crystal cell and a polarizing sheet” and at col. 1, lines 27-28, that “[t]he polarizing sheet comprises a polarizing film and a protective film.” Similarly, Bahadur, whose teachings are relied upon by the Patent Office in the foregoing rejection, states on page 189 that “[p]olarizers applied to the LC cell are usually made of 3-layered plastic films. The intermediate layer made of PVA has a polarizing effect derived from expanding the film containing highly concentrated iodine (I) dyes, which are aligned in the expanded direction. Passivated layers are applied to both sides of the polarizing layer.” In addition, Kubota, whose teachings are relied upon by the Patent Office in connection with another rejection, states at col. 4, lines 14-16, that “[p]olarizing films 19 and 19' together with exterior plates 20 and 20' make up the polarizer and analyzer plates respectively.” Consequently, in view of the above, Applicants respectfully submit that one of ordinary skill in the art would regard polarizing sheets I and III, not elements 3 and 17, of Yoshida as representing front and rear polarizers.

In a similar vein, Applicants respectfully submit that it is error for the Patent Office to regard elements 4 and 18 of Yoshida as the claimed first and second transparent plates, respectively, since such elements constitute a part of the front and rear polarizers, respectively. Moreover, as noted in Yoshida at col. 8, lines 16-18, elements 4 and 18 are films having “a thickness preferably in the

range of 50 to 200 μm , and more preferably in the range of 50 to 200 μm .” Applicants respectfully submit that one of ordinary skill in the art would not regard such films as “plates.”

With respect to claims 2 and 6, in view of the above-described thicknesses of Yoshida elements 4 and 18 and the purpose to which such elements are put by Yoshida, Applicants respectfully submit that one of ordinary skill in the art would not have been motivated to make such elements out of glass.

Accordingly, for at least the above reasons, the present rejection should be withdrawn.

Claims 25-27 stand rejected under 35 U.S.C. 103(a) “as being unpatentable over Kubota (U.S. 3,869,196) in further view of Sampica et al. (U.S. 5,867,241) and Mikura et al. (U.S. 5,880,800).”

Applicants have canceled claims 25-27 in this paper. Therefore, the rejection is moot and should be withdrawn. Applicants reserve the right to prosecute the subject matter of claims 25-27 in one or more continuing applications.

Claims 38-41 stand rejected under 35 U.S.C. 103(a) “as being unpatentable over Murakami et al. (U.S. 6,572,941) in further view of Mikura et al. (U.S. 5,880,800) and Sampica et al. (U.S. 5,867,241).” In support of the rejection, the Patent Office states the following:

Note the following elements in figure 3 of Murakami et al.: PET film 101, front polarizer 102, rear polarizer 203, and liquid crystal cell 201. The PET film 101 is considered to be the transparent cover. The front polarizer 102 is separated from the liquid crystal cell 201 by an air gap formed between resistive membranes 111 and 131.

Murakami et al. does not disclose adhering the various elements with an index-matched pressure sensitive adhesive. Mikura et al. discloses that pressure sensitive adhesives are excellent in heat resistance and moisture resistance, are difficult to cause foaming and peeling even in a high temperature and high humidity atmosphere,

and are therefore particularly suitable for use in the formation of a liquid crystal display. See column 1, lines 5-10. It would have been obvious to one of ordinary skill in the art at the invention to adhere the various elements of Murakami et al. using a pressure sensitive adhesive because of its excellent heat resistance and moisture resistance.

Mikura et al. does not disclose an index matched pressure sensitive adhesive. Sampica et al. discloses that within an LCD, it is critical to the display performance for the index of refraction of the adhesive to closely match that of the optical components. See column 1, lines 25-30. It would have been obvious to one of ordinary skill in the art at the time of invention to select a pressure sensitive adhesive such that the index of refraction of the adhesive matched the index of refraction of the optical components of the LCD because this was critical to the display performance.

Murakami et al. does not disclose the structure of the liquid crystal cell. However, it was known that the basic structure of a liquid crystal cell comprised two transparent substances, each having a transparent conductive layer formed thereon, sandwiching a layer of liquid crystal such that the two transparent conductive layers oppose each other within the cell. It was known that this structure was the most cost-effective for producing an LCD. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to form an LCD having this structure because it was cost-effective.

As to claim 40, Murakami et al. discloses a PET resin 101 formed over polarizer 102.

As to claim 41, Murakami et al. discloses a touch screen. See abstract.

As to claim 39, Murakami et al. discloses a PET resin cover instead of a glass cover. It was well known that glass was cheaper to manufacture and had a higher level of transparency than PET resin. It would have been obvious to one of ordinary skill in the art at the time of invention to form the front cover with glass instead of PET resin because glass was cheaper to manufacture and had a higher level of transparency.

Applicants respectfully traverse the present rejection. Claim 38, from which claims 39 and 40 depend, has been amended herein and now recites “[a] liquid crystal display comprising:

(a) a liquid crystal display panel, said liquid crystal display panel comprising a first transparent substrate, a second transparent substrate, liquid crystal material positioned between said first and second transparent substrates, a first transparent electrode positioned between said liquid crystal material and said first transparent substrate, and a second transparent electrode positioned between said liquid crystal material and said second transparent substrate;

(b) a rear polarizer assembly positioned behind said liquid crystal display panel, said rear polarizer assembly comprising a rear polarizer and a first index-matched pressure sensitive adhesive, said rear polarizer having a front side and a rear side, said first index-matched pressure sensitive adhesive being positioned on said front side of said rear polarizer;

(c) a front polarizer assembly positioned in front of said liquid crystal display panel and separated from said liquid crystal display by an air gap, said air gap formed by said front polarizer assembly and said liquid crystal display, said front polarizer assembly comprising a front polarizer and a second index-matched pressure sensitive adhesive, said front polarizer being crossed relative to said rear polarizer and having a front side and a rear side, said second index-matched pressure sensitive adhesive being positioned on said front side of said front polarizer; and

(d) a transparent cover, said transparent cover being positioned in front of said front polarizer assembly and in contact with said second index-matched pressure sensitive adhesive.”

Claim 38 is not rendered obvious by the applied combination of references for at least the reason that the applied combination of references does not teach or suggest a liquid crystal display comprising, among other things, a liquid crystal display panel and a front polarizer assembly

positioned in front of said liquid crystal display panel, said front polarizer assembly being separated from said liquid crystal display by an air gap, said air gap formed by said front polarizer assembly and said liquid crystal display. Instead, Murakami et al. discloses a liquid crystal display in which liquid crystal cell 201 is spaced apart from polarizing film 102 by an air gap, the air gap being defined by $\frac{1}{4}\lambda$ retardation film 204 and base sheet member 130, both of which are interposed between liquid crystal cell 201 and polarizing film 102. Neither Mikura et al. nor Sampica et al. cure this deficiency in Murakami et al.

Claim 41, which has been re-written in independent form, is not rendered obvious over the applied combination of references for the reasons discussed above in connection with claim 38, as well as for the reason that the applied combination of references does not teach or suggest positioning a touch panel in front of the front polarizer assembly. Instead, Murakami et al. discloses that polarizer film 102 is a part of touch panel 100. It is logically impossible for touch panel 100 to be in front of polarizer film 102 if polarizer film 102 forms a part of touch panel 100. The only structure in Murakami et al. that is positioned in front of polarizer film 102 is PET film 101, which, by itself, is not a touch panel. Neither Mikura et al. nor Sampica et al. cure this deficiency in Murakami et al.

Accordingly, for at least the above reasons, the present rejection should be withdrawn.

Claims 38-41 stand rejected under 35 U.S.C. 103(a) “as being unpatentable over Ziegler (U.S. 4,657,348) in further view of Mikura et al. (U.S. 5,880,800) and Sampica et al. (U.S. 5,867,241).” In support of the rejection, the Patent Office states the following:

Note the following elements in figure 1 of Ziegler: front cover 18, front circular polarizer 19, LCD cell 11, and rear linear polarizer

14. Note the triangular air gap between the front polarizer 19 and the liquid crystal cell 11.

Ziegler does not disclose adhering the various elements with an index-matched pressure sensitive adhesive. Mikura et al. discloses that pressure sensitive adhesives are excellent in heat resistance and moisture resistance, are difficult to cause foaming and peeling even in a high temperature and high humidity atmosphere, and are therefore particularly suitable for use in the formation of a liquid crystal display. See column 1, lines 5-10. It would have been obvious to one of ordinary skill in the art at the invention to adhere the various elements of Murakami et al. using a pressure sensitive adhesive because of its excellent heat resistance and moisture resistance.

Mikura et al. does not disclose an index matched pressure sensitive adhesive. Sampica et al. discloses that within an LCD, it is critical to the display performance for the index of refraction of the adhesive to closely match that of the optical components. See column 1, lines 25-30. It would have been obvious to one of ordinary skill in the art at the time of invention to select a pressure sensitive adhesive such that the index of refraction of the adhesive matched the index of refraction of the optical components of the LCD because this was critical to the display performance.

Ziegler does not disclose the structure of the liquid crystal cell. However, it was known that the basic structure of a liquid crystal cell comprised two transparent substances, each having a transparent conductive layer formed thereon, sandwiching a layer of liquid crystal such that the two transparent conductive layers oppose each other within the cell. It was known that this structure was the most cost-effective for producing an LCD. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to form an LCD having this structure because it was cost-effective.

As to claim 39, Ziegler does not disclose forming the front cover from glass. It was well known that glass was cheaper to manufacture and had a higher level of transparency than plastic. It would have been obvious to one of ordinary skill in the art at the time of invention to form the front cover with glass because glass was cheaper to manufacture and had a higher level of transparency than plastic.

As to claim 40, Ziegler does not disclose forming the front cover from plastic. It was well known that plastic was more flexible and was much less likely to crack or shatter than glass. It would have been obvious to one of ordinary skill in the art at the time of invention to form the exterior plates using plastic because plastic was more flexible and less likely to crack or shatter than glass.

Applicants respectfully traverse the present rejection. Claim 38 is not rendered obvious by the applied combination of references for at least the reason that the applied combination of references does not teach or suggest a liquid crystal display comprising, among other things, a liquid crystal display panel and a front polarizer assembly positioned in front of said liquid crystal display panel, said front polarizer assembly being separated from said liquid crystal display by an air gap, said air gap formed by said front polarizer assembly and said liquid crystal display. Instead, Ziegler discloses a liquid crystal display in which LCD cell 11 is spaced apart from circular polarizer 19 by an air gap, the air gap being defined by $\lambda/4$ retarding foil 16 and polarizer 19. Neither Mikura et al. nor Sampica et al. cure this deficiency in Ziegler.

Claim 41, which has been re-written in independent form, is not rendered obvious over the applied combination of references for the reasons discussed above in connection with claim 38, as well as for the reason that the applied combination of references does not teach or suggest positioning a touch panel in front of the front polarizer assembly. Ziegler does not disclose a touch panel. Neither Mikura et al. nor Sampica et al. cure this deficiency.

Accordingly, for at least the above reasons, the present rejection should be withdrawn.

Claim 1 stands rejected “under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,181,394.” In support of the rejection, the Patent Office states that “[a]lthough the conflicting claims are not identical, they are

not patentably distinct from each other because the only difference between the claims is that claim 1 of the current application omits the electromagnetic interference shield and merely recites basic structural elements of conventional liquid crystal display panels.”

Without acquiescing in the propriety of the rejection, Applicants are submitting herewith a Terminal Disclaimer that overcomes the rejection. Therefore, the rejection should be withdrawn.

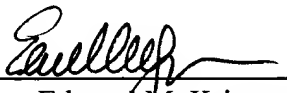
In conclusion, it is respectfully submitted that the present application is in condition for allowance. Prompt and favorable action is earnestly solicited.

If there are any fees due in connection with the filing of this paper that are not accounted for, the Examiner is authorized to charge the fees to our Deposit Account No. 11-1755. If a fee is

required for an extension of time under 37 C.F.R. 1.136 that is not accounted for already, such an extension of time is requested and the fee should also be charged to our Deposit Account.

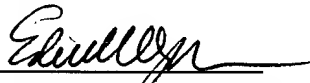
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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Mail Stop Fee Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on August 18, 2004.


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